

**FEATURES:**

- Wide input range 50-160V
- 3mA Low no-load Power
- Efficiency up to 91%
- 3000VDC I/O Isolation
- Industry Standard: 1/2 brick
- Operating temperature -40°C to +100°C
- Meets Railway Standard EN50155
- Under Voltage, Over Voltage, Over Current, Continuous Short Circuit & Over Temperature protection

**Models Single output**

Model	Input Voltage (V)	Input Current No load/Full load (mA)	Output Voltage (V)	Output Current max (A)	Max Capacitive load (µF)	Efficiency (%)
AM150HB-11012S-NZ	66-160	3/1532	12	12.500	10,000	89
	50-66			10.000		
AM150HB-11015S-NZ	66-160	3/1532	15	10.000	6,800	89
	50-66			8.000		
AM150HB-11024S-NZ	66-160	3/1499	24	6.250	4,400	91
	50-66			5.000		

NOTE: Add suffix "-K" for optional heatsink options but with exception of AM150HB-11015S-NZ-K model.

The AM150HB-11012S-NZ and AM150HB-11015S-NZ models will be discontinued (EOL) by December 30, 2020. For new design, please refer to AM150HB-JZ series.

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

**Input Specifications**

Parameters	Conditions	Typical	Maximum	Units
Voltage range	Nominal 110	66-160	170	VDC
Filter	π(Pi) Network			
Startup time		25		ms
Absolute Maximum Rating			180	VDC
Peak Input Voltage time			1,000	ms
Input reflected ripple current	Measured with the referenced circuit	80		mA p-p
Under Voltage Lockout (On/Off)		43	50	VDC
On / OFF Control*	Module switch on	Ctrl suspended or connected to TTL high level (3.5-12VDC)		
	Module switch off	Ctrl connected to -Vin or low level (0-1.2VDC)		
	Input current when switched off	2	5	mA

NOTE: \* the voltage of Ctrl pin is relative to input pin -Vin.

**Isolation Specifications**

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60s, leak current less than 1mA		3000	VDC
Input to aluminum plate	60s, leak current less than 1mA		1500	VDC
Output to aluminum plate	60s, leak current less than 1mA		1000	VDC
Resistance	Input-output, insulation voltage 500VDC	1000		MOhm
Capacitance		2500		pF

## Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		±1	±3	%
Over voltage protection		110~140		% of Vout
Over load protection	Hiccup	110~180		% of Iout
Short Circuit protection	Hiccup, Continuous, Auto-recovery			
Thermal shutdown	On Case	100	120	°C
Line voltage regulation	Full load		±0.3	% of Vin
Load voltage regulation	10% to 100% Full Load		±0.5	%
Temperature coefficient	Full load		±0.03	%/°C
Ripple & Noise*	20MHz Bandwidth (with 10% to 100% Full load)	60	150	mV p-p
Transient Response Deviation	25% load step change, 15V/24V Output Voltage	±3	±5	% of Max
	25% load step change, 12V Output Voltage	±4	±8	% of Max
Transient Recovery		300	500	µsec
Voltage adjustment range(Trim)		95 to 110		%
Output voltage remote compensation(Sense)		105		% of Vout

NOTE: \* The measuring method of ripple and noise, please refer to Fig. 2.

## General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	PWM mode	160		KHz
Operating temperature	With derating (see graph below)	-40 to +100		°C
Storage temperature		-55 to +125		°C
Maximum case temperature	Within the operating temperature curve	-40 to +100		°C
Cooling	Free Air Convection or Forced Convection 200-1000 LFM airflow			
Humidity		5 to 95		% RH
Case material	Aluminum plate + plastic case	Non-conductive Black Plastic (UL94V-0 rated)		
	Heatsink	Aluminum Alloy		
Weight		70		g
Weight (with Heatsink)		120		g
Dimensions (L x W x H)	2.28 x 2.40 x 0.5 inches	57.9 x 61.0 x 12.7 mm		
Dimensions (L x W x H) with Heatsink	2.28 x 2.44 x 1.21 inches	57.9 x 62.0 x 30.8 mm		
MTBF	>500,000 hrs (MIL-HDBK-217 F at Plate Tb=+70°C, GB °C)			
Maximum soldering temperature	1.5mm from case for 10 sec		300	°C

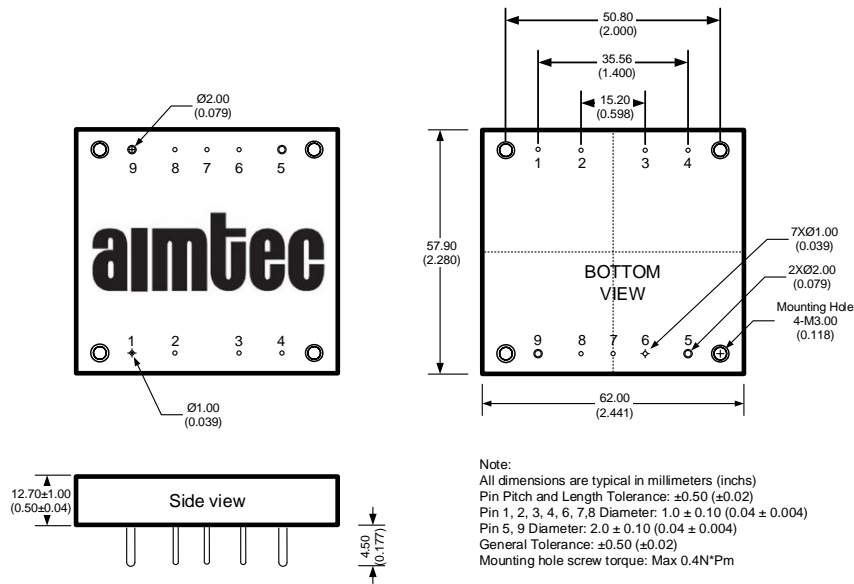
## Safety Specifications

Parameters		
Standards	EMI - Conducted and radiated emission	CISPR22/EN55022, class B (with the recommended EMC circuit), see figure 4.
	Electrostatic Discharge Immunity	IEC 61000-4-2, Criteria B
	RF, Electromagnetic Field Immunity	IEC 61000-4-3, Criteria A
	Electrical Fast Transient/Burst Immunity	IEC 61000-4-4, Criteria B (with the recommended EMC circuit), see figure 4.
	Surge Immunity	IEC 61000-4-5, Criteria B (with the recommended EMC circuit), see figure 4.
	RF, Conducted Disturbance Immunity	IEC 61000-4-6, 10Vr.m.s, Criteria A
	Immunity of Short interruption	EN50155, 100%-0%, 10ms, Criteria B

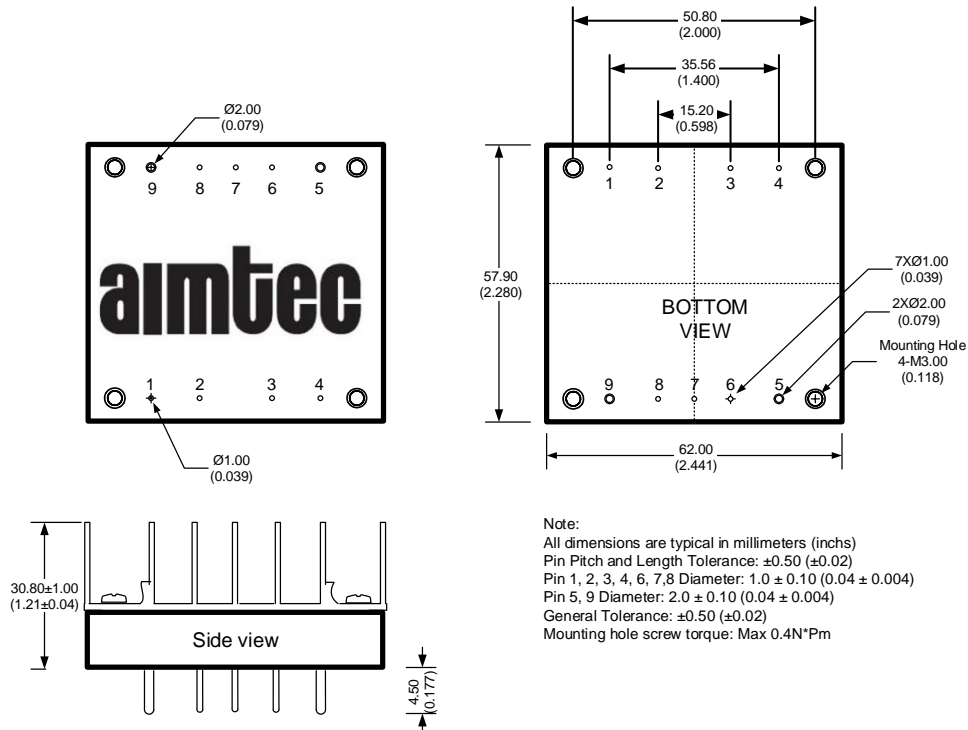
Pin Out Specifications

Pin	Single
1	+V Input
2	On/Off Control
3	Case
4	-V Input
5	0V
6	Sense -
7	Trim
8	Sense +
9	Vo +

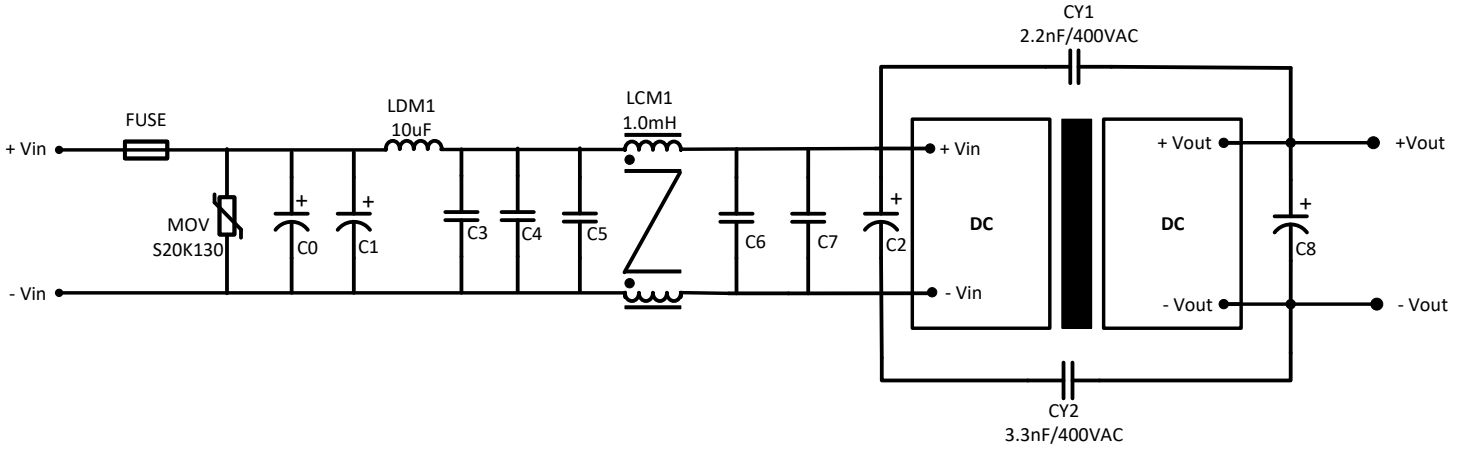
Dimensions



Dimensions with Optional Heatsink (-K option)

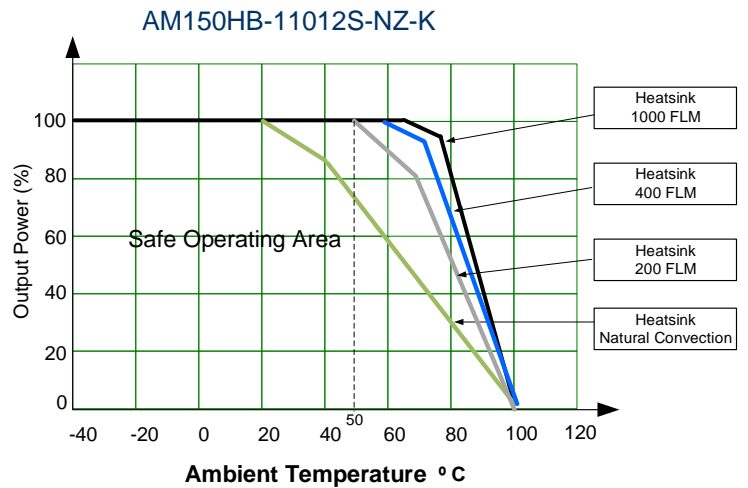
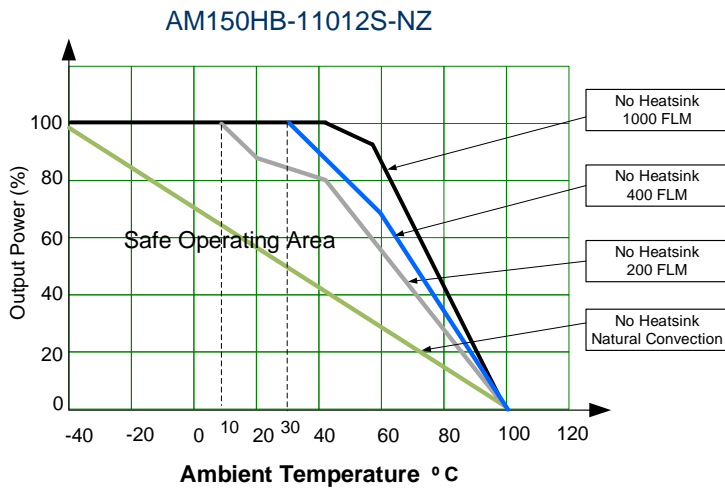


### Recommended EMC Circuits

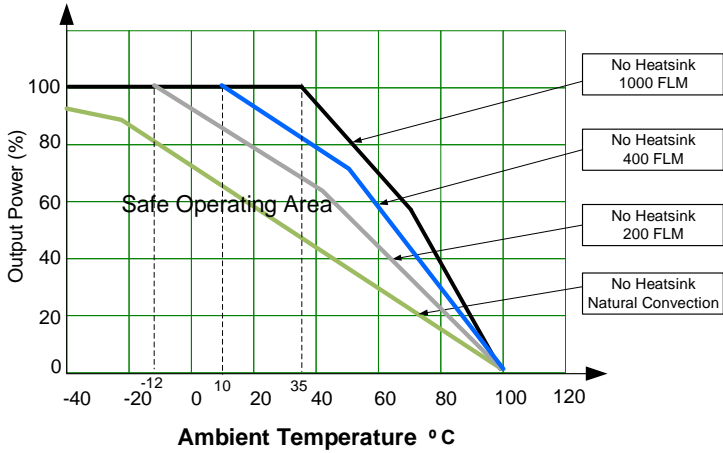


Element model	Recommended value
FUSE	Choose according to actual input current
MOV	S20K130 (Varistor)
C0	220uF/400V (Electrolytic Capacitor)
C1, C2	100uF/400V (Electrolytic Capacitor)
C3, C4, C5, C6, C7	2.2uF/250V
C8	220uF/50V(Electrolytic Capacitor)
CY1	2200pF/400VAC (Y Safety Capacitor)
CY2	3300pF/400VAC (Y Safety Capacitor)
LDM1	10uH (Shielded Inductor)
LCM1	1000uH, 3.0A min.

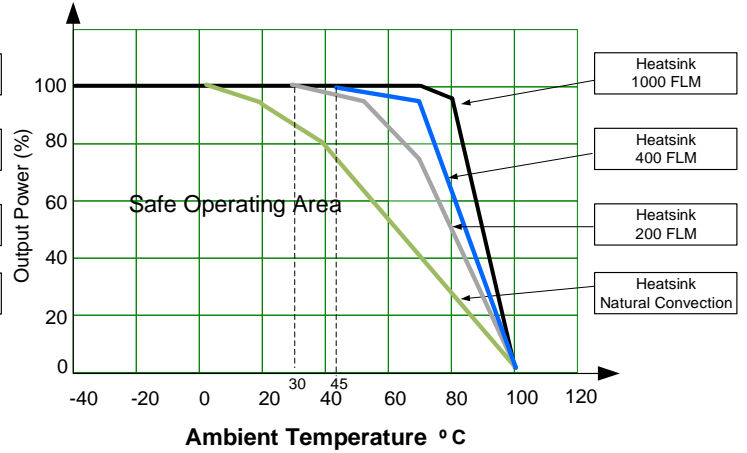
### Derating



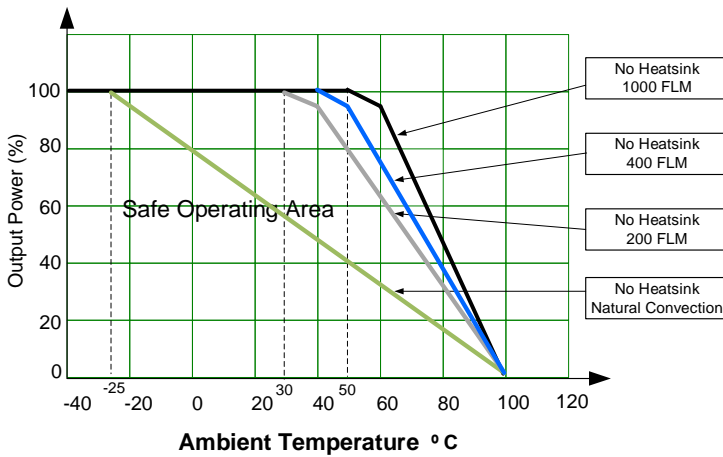
AM150HB-11015S-NZ



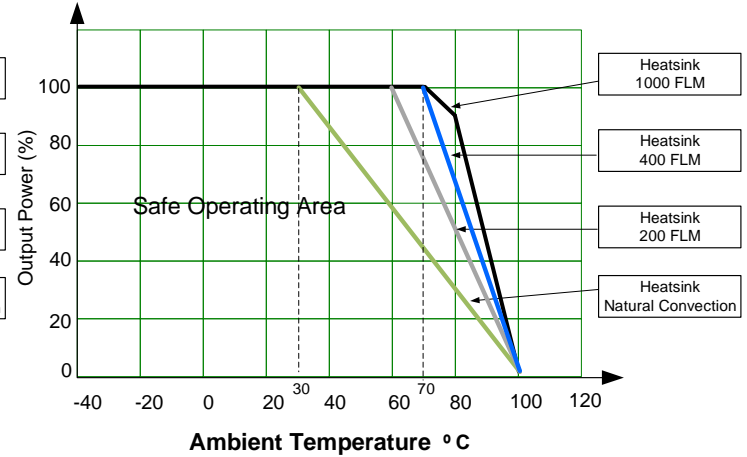
AM150HB-11015S-NZ-K



AM150HB-11024S-NZ



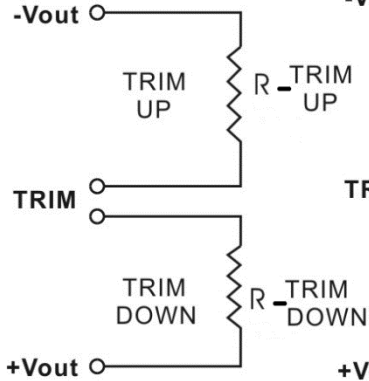
AM150HB-11024S-NZ-K



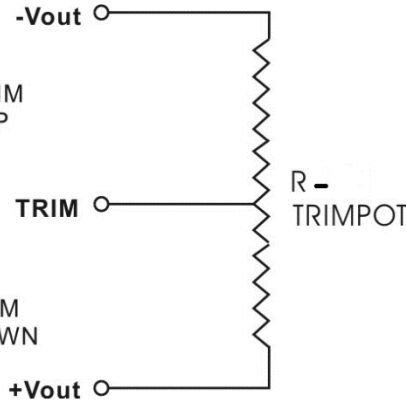
### Trimming

Output voltage can be externally trimmed by utilizing the methods as shown below

#### Fixed Resistor



#### Variable Potentiometer



Leave open if not used.

AM150HB-11012S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	11.88	11.76	11.64	11.52	11.4	11.28	11.16	11.04	10.92	10.8
Rt down (KΩ)	493.292	298.652	209.727	158.785	125.773	102.642	85.532	72.364	61.916	53.423
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	12.12	12.24	12.36	12.48	12.6	12.72	12.84	12.96	13.08	13.2
Rt up (KΩ)	703.635	156.120	81.079	51.275	35.277	25.295	18.474	13.517	9.752	6.795

AM150HB-11015S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	14.85	14.7	14.55	14.4	14.25	14.1	13.95	13.8	13.65	13.5
Rt down (KΩ)	638.028	398.954	285.279	218.840	175.260	144.474	121.568	103.860	89.761	78.271
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	15.15	15.3	15.45	15.6	15.75	15.9	16.05	16.2	16.35	16.5
Rt up (KΩ)	1271.500	183.455	90.426	55.777	37.679	26.559	19.034	13.602	9.498	6.287

AM150HB-11024S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	23.76	23.52	23.28	23.04	22.8	22.56	22.32	22.08	21.84	21.6
Rt down (KΩ)	1289.521	792.049	564.771	434.571	350.197	291.076	247.346	213.690	186.986	165.281
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	24.24	24.48	24.72	24.96	25.2	25.44	25.68	25.92	26.16	26.4
Rt up (KΩ)	795.550	176.609	91.778	58.086	40.001	28.717	21.006	15.402	11.146	7.803

**NOTE:** 1. Datasheets are updated as needed and as such, specifications are subject to change without notice. Once printed or downloaded, datasheets are no longer controlled by Aimtec; refer to [www.aimtec.com](http://www.aimtec.com) for the most current product specifications. 2. Product labels shown, including safety agency certifications on labels, may vary based on the date manufactured. 3. Mechanical drawings and specifications are for reference only. 4. All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. 5. Aimtec may not have conducted destructive testing or chemical analysis on all internal components and chemicals at the time of publishing this document. CAS numbers and other limited information are considered proprietary and may not be available for release. 6. This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet. 7. Warranty is in accordance with Aimtec's standard Terms of Sale available at [www.aimtec.com](http://www.aimtec.com).